ON [illegible]KRAIN[illegible]S STATE ENERGY POLICY DOCTRINE UP TO 2020

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The contradiction between availability of countries' own power resources and increasing demand for them, lack of fuel and energy resources' (FER) stocks and aggravation of ecological problems connected with their production, haul, waste-handling and consumption, predetermine the trend of energy questions becoming more acute both in the activities of mankind and those of each separate country. As a result, the strife to possess power resources and the right to haul them to influence the energy carriers' market has become today one of the major factors of realisation of the states' pattern concerns, their political behaviour, foundation of political and economic unions and, at last, source of international conflicts. Taking all this into account, each state formulates its own energy policy.

Ensuring stable progressing of the fuel and energy complex (FEC) is an indispensable condition for the national economy revival, that is especially important at a stage of its signing on in the field of global economy, as economic and political independence of the country largely depends on FEC state.

In these conditions the development of the long-term Concept of State Energy Policy of Ukraine is badly needed. It should be aimed at: overcoming crisis phenomena in power engineering; raise of energy security level of Ukraine under the conditions of transferring to stable progressing; determination of baseline checkpoints for formation of long-term tasks of FEC development.

The experts of the Razumkov Centre had prepared the draft of the Concept of State Energy Policy of Ukraine through 2020 that became a subject for a «Round Table» discussion on February 23 this year with the participation of the People's Deputies, representatives of ministries and offices of Ukraine, foreign states' embassies and energy companies, branch specialists and trade unions (the draft of the Concept is published in the magazine «National Security and Defence» (#2, 2001).

Simultaneously, Ukrainian Centre for Economic and Political Studies (UCEPS) sociological service has conducted (from January 22 till February 2, 2001) a nation-wide opinion poll among 2000 respondents. Some problems of FEC functioning and development contained in the concept are given below.

POTENTIAL AND BASIC TRENDS OF THE FUEL AND ENERGY COMPLEX

The main trend in the fuel and energy complex over the last decade has been a decrease in output (production) of fuel and energy resources in all sectors. According to preliminary data presented by Ukraine's Fuel and Energy Ministry, this negative trend persisted in 2000: although the majority of sectors of the fuel and energy complex met their yearly targets, the production of oil (including gas condensate) and natural gas fell in comparison with 1999 by 2.9% and 0.4%, respectively; of electric power — by 0.5%; and of coal — by almost 2%.

Relatively stable work of the oil and gas sector, as compared to other branches, presents a mere illusion of prosperity. In reality, the effect of previous investments in the sector is being exhausted, and decommissioning of obsolete assets is bringing about a danger of significant decreases in oil and gas production in the near future.

Hydrocarbons extraction in Ukraine is characterised by a sharp deterioration of sources of raw materials, both in quality (higher share of not easily extractable resources) and quantity terms (less reserves). Along with a fall in investments and lower return from geological prospecting, those factors are bringing about a gradual decrease in oil and gas output. As a result, domestic production covers only a part of Ukraine's need in hydrocarbons: in natural gas — 24%, in oil — 12%.

In recent years, the load of domestic refineries has been constantly falling: in 1999, it was 18.6%, while in 2000 it fell to 14%.

The depth of oil processing at Ukrainian refineries remains low — 63% on the average, against 90% at the best U.S. factories. This should be taken into account while resolving the problem of diversification of oil supply to Ukrainian refineries.

Ukraine is one of the most important gas transit countries in the world. More than 90% of all Russian gas exports reaches world markets via Ukraine's territory.

Due to the intense use of the gas transportation system, many main gas supply pipelines, compressors and other equipment require modernisation. Close to one third of all gas supply pipelines have been in operation for 23 to 48 years; almost 45% of all pipelines are poorly coated, which leads to corrosion. Many gas-pumping units installed at compressor stations are obsolete and worn out.

The core of Ukraine's oil transportation system is made up by two autonomous systems of main oil supply pipelines — "Druzhba" and "Prydniprovsky Main Oil Pipeline"; and petroleum product supply pipelines and oil terminals. The construction of the "Pivdennyi" Oil Terminal and the Odesa - Brody oil supply pipeline is nearing completion. In 1991-2000, the amount of oil transported across Ukraine fell by a third (including in 2000 — by 2.2%, in comparison with 1999). The general decline in the amount of oil transportation has been caused by a decrease in supplies to Ukraine's refineries. Meanwhile, oil transit rose by almost a third, compared with 1991, and over the most recent four years have been stable at 53-56 million tons.

In 1990-1997, the production of coal in Ukraine fell rapidly and reached an all-time low (70.5 million tons) in 1996. An insignificant increase in the following years has failed to substantially improve the balance of foreign trade in coal: in 1995-1999, coal imports were almost four times bigger than exports and made up close to 5 million tons per year.

According to preliminary data, in 2000 Ukraine's coal mining companies produced 80.3 million tons of coal — 1.4 million tons less than in 19994. The main reason for the decline in coal mining was the shortage of funds (budget funds were not allocated for capital construction before July 2000), which brought about delays in breakage face preparation. Given the low rate of commissioning of new extraction capacities, a further decline in coal output can be predicted.

The core of power engineering is made up of the national integrated energy system that provides centralised distribution of energy for domestic consumers and performs power export and import operations.

Over 1990-2000, the production of electric power fell by 42.8%. In 2000, thermal power plants produced the largest share of electric power — 48%, nuclear power plants — 45,3%, hydroelectric power plants — 6,7%.

Over 95% of power units have completed their planned operational life (100,000 hours), and more than half of them have been in operation for more than 200,000 hours.

Ukraine operates four nuclear power plants6 with 13 power-generating units. Their aggregate installed capacity is up 11.8 GW. Most units equipped with WWER-1000 reactors have been in operation for approximately 15 years (their designed life — 30 years).

Nuclear plant safety is another serious problem.

The lack of financing, the lapse of nuclear power plant life and the absence of a national programme of nuclear power engineering development make further prospects in the branch dim.

The core of the hydroelectric power engineering system is made up of eight large hydroelectric power plants: seven stations of the Dnipro cascade and Dnister Hydroelectric Power Plant No.1. After many years of service, hydroelectric power plant and hydraulic engineering equipment is largely worn out and requires upgrading.

Generally speaking, the potential of Ukraine's fuel and energy complex is rather high; some sub-sectors (first of all, oil refining, power engineering) have idle capacities that surpass national needs. Even in the present critical conditions, the nuclear power engineering and oil and gas pipeline complex operate rather steadily; signs of stabilisation are observed in coal mining and geological prospecting of hydrocarbons.

At the same time, the majority of equipment and technologies of the fuel and energy complex is obsolete and worn out. Investments into power engineering are scanty, which (in connection with the non-payments crisis) makes its stable operation and progress impossible. As a result, in 1990-2000 Ukraine's fuel and energy complex (power engineering, coal industry and oil and gas complex) demonstrated a steady tendency toward declines in basic indicators.

Ukraine's fuel and energy complex does not satisfy national demand for fuel and energy.

Over the next 20 years Ukraine will remain a net importer of energy and consequently will require annual imports of fuel and energy resources in the amount of 100-140 million tons of conventional fuel.

Im ments. Realisation of diversification projects is hampered by the following factors. First comes the issue of very high costs — the cost of construc of oil and pipelin nd creation of a national nuclear fuel manufacturing cycle or elements thereof runs into the hundreds of millions or even billions of dollars. Second, iew critical st Ukraine's economy and the unfavourable investment climate (and correspondingly high risks for investors), it will be impossible to establish fu native es of all types of energy resources by 2020. Third, at the initial stage of tapping alternative sources, these new energy supply can be more expens an cu (from Russia). Fourth, realisation of diversification projects can complicate relations between Ukraine and the Russian Federation to a certain extent (discont import of energy resources supply from Russia is impossible even over the long-term, and it is economically inexpedient as well).

Natural gas: Russia possesses the largest gas resources in the world, borders Ukraine (transportation expenses are minimal) and is already connected with our state by a powerful gas transit pipeline system. In light of these facts, the Russian Federation will remain the main supplier of natural gas for Ukraine until 2020. At the same time, Ukraine has a favourable geographic location and can diversify its gas supply to include Turkmenistan, Kazakhstan, Uzbekistan, and also Norway, Azerbaijan and Iran.

At the first stage of diversification projects implementation, Ukraine should solve the issue of gas imports from Russia, Turkmenistan, Uzbekistan and Kazakhstan. Although gas supply from the latter three states can be carried out only via Russian gas pipelines, the problem of attracting alternative sources would be at least partially solved. First, it is necessary to satisfy the minimum requirements — gas supply from one source should not exceed 51% of all import supplies.

As a next step, Ukraine needs to develop gas supply routes that do not cross the territory of Russia (Table "Possible sources of natural gas

supply to Ukraine"10). This will make it possible for Ukraine to achieve true diversification. Later on, the involvement of new sources of gas supply (that is, more than three sources) will be determined exclusively by the economic expediency thereof.

The implementation of diversification projects is possible only on the condition of large Western credits and creating international consortiums. In addition, liquid natural gas supplies require creation of a Black Sea market for liquid gas11 and participation of the leading multinational oil and gas corporations in the construction of a receiving terminal and installation of a liquid gas re-gasification plant. With the creation of such an infrastructure for receiving liquid gas, the number of potential gas exporters will be expanded. Potential suppliers would include not only the countries of the Caspian region, but also Oman, Libya and other countries.

Oil. The construction of new oil transit pipelines across Ukrainian territory will promote utilisation of national oil refineries and will cut prices for crude oil on the domestic market. Ukraine's geographic location theoretically enables it to draw on oil supply in a variety of regions: Russia, Kazakhstan, Azerbaijan, Middle East countries and others.

The problem of oil supply diversification should be resolved by taking into account economic factors. It is impossible to resolve this problem based solely on political arrangements. Transport expenses and the level of oil refining at the oil refineries determine the economic expediency of oil supply. Considering these factors, along with international requirements concerning oil purchase contracts, drawing on oil supplies from the Middle East and other countries is impossible in the medium-term, because the export routes at issue do not cross Ukraine.

Ukraine's location on the route of Caspian oil exports to Europe creates preconditions for the construction of a new (and actually the sole alternative) transit oil pipeline, in addition to existing sources (Russia and Kazakhstan). The oil supply route suggested by Ukraine to the countries of Central Europe (Slovakia, the Czech Republic, Hungary, Croatia and Germany, in the future), avoiding the Bosporus Strait, utilising the "Odesa-Brody" system and continuing on to the port of Gdansk (Poland), has certain advantages over the "Baku-Ceyhan" route being lobbied by the USA. Low transit tariffs are its main advantage.

In the opinion of UCEPS experts, the route from Brody via the "Druzhba" oil pipeline directly to European countries, with subsequent access to the port of Omishal (Croatia) on the Adriatic Sea, is more advantageous. That port can receive large tankers (up to 500,000 tons), which permits them to carry out intercontinental transportation of oil to the USA (after the embargoes against Iran and Iraq are lifted, an over-saturation of the Mediterranean market can be expected). Access to this capacious port has advantages as compared with Baltic ports (Gdansk and others), the access to which is confined by the limited depth of the Danish Straits (maximum tanker dead-weight — 120,000 tons).

Commissioning of the "Odesa-Brody" system will resolve the issue of diversification of both transit routes and oil supply to Ukrainian

refineries. However, today there are grounds to predict a considerable delay in the realisation of this project due to the absence of signed agreements on using the "Odesa-Brody" system; an absence of sufficient volumes of oil (primarily in Azerbaijan) to load this route; a drop in world oil prices; and availability of other competitive routes (through Turkey, Iran and other countries).

Implementation of this project requires urgent negotiations with the aim of signing contracts and interstate agreements on its realisation involving leading transnational corporations and countries that supply oil to the Black Sea (including Russia), on whose territory connecting oil pipelines will be constructed and Ukrainian oil pipeline will be connected to them, which will be potential consumers of this oil (the volumes of oil and transit tariffs need to be determined).

In the opinion of UCEPS experts, Ukraine should move the emphasis in negotiations on oil supply away from interstate talks with Kazakhstan and Azerbaijan and move towards reaching agreements with leading transnational corporations that own 75-80% of the oilfields in these countries. Ukraine must also take into consideration the state interests of these countries in resolving the issue of oil supply for Ukrainian oil refineries (after the latter are privatised by Russian and Kazakh companies).

After the relevant contracts and agreements are signed, Ukraine needs to complete the construction of the "Odesa-Brody" system, including the "Pivdennyi" oil terminal, and to build a tanker fleet meeting the requirements of the scope of the project.

It is inexpedient to continue construction of the "Odesa-Brody" oil pipeline before signing the said contracts and agreements. At the same time, construction of the "Pivdennyi" oil terminal can be regarded as an independent project of supplying oil to nearby Ukrainian refineries. If it proves impossible to load the "Odesa-Brody" oil pipeline, it is advisable to view the construction of the terminal as a separate project, hold negotiations and conclude respective agreements on oil supply, and complete the construction of the terminal only thereafter.

Nuclear fuel. The supply of nuclear fuel to the Ukrainian nuclear power plants, storage and processing of the spent fuel is carried out wholly by Russia. Termination of compensatory supplies of nuclear fuel from Russia (in exchange for nuclear weapons transferred from Ukraine) and nearly complete exhaustion of normative irreducible stocks of fuel threaten Ukraine's energy security. This can lead to greater economic pressure on the part of Russia as a monopoly nuclear fuel supplier.

The substantial share of nuclear power in terms of total electric power generation, as well as the necessity of ensuring energy security militates for the creation of a domestic nuclear fuel cycle in Ukraine. However, in view of the absence of a National Programme of Nuclear Power Development, which would determine the real prospects for the next 30-40 years, as well as the high value of creating a nuclear fuel cycle, construction of such a complete cycle is risky, from the economical standpoint. Therefore, until 2020 it would be more expedient to create separate components of such a cycle.

After the realisation of the joint project with Westinghouse company (based on inter-governmental agreements between Ukraine and the USA on peaceful utilisation of nuclear power and the qualification of the nuclear fuel for the Ukrainian NPP), Ukraine can use nuclear fuel purchased from other countries. This will promote diversification of supply for Ukrainian NPPs.

ADAPTATION OF UKRAINE'S ENERGY LEGISLATION TO THE NORMS AND STANDARDS OF THE EUROPEAN UNION

EU membership has been proclaimed as the priority goal of Ukraine's foreign policy. Reaching this target requires, among other things, compliance with legal, organisational and technical requirements in the fuel and energy sector and related branches, as regulated by the European Union. Progress in reforming the energy sector is an important element of Ukraine's adoption of EU legal and regulatory standards — Acquis communautaire.

Adaptation of Ukraine's energy legislation to the norms and standards of the EU is intended to: limit administrative interference of the state into the fuel and energy complex; liberalise energy markets; create a favourable investment climate for attraction of foreign capital into the fuel and energy complex; raise energy efficiency of the economy; employ energy conservation potential; enhance nuclear safety; reduce negative environmental effects of the fuel and energy complex; create strategic reserves of oil, and so on. Over the next 10-15 years, energy efficiency, nuclear safety and environmental protection should become priority spheres for Ukraine's co-operation with the EU.

General sequence of events and procedures intended to facilitate Ukraine's integration with the energy sector of the European Union:

· training of experts on EU energy legislation;

· definition of the complete list of EU directives (and other important documentation) governing legal relations in the fuel and energy complex and related branches; creation of relevant databases and their purpose-oriented categorisation;

Y PROBLEMS OF THE FUEL AND ENERGY COMPLEX

The situation that emerged in Ukraine's fuel and energy complex over the last five or six years can be viewed as a serious threat to Ukraine's national se Despite the potent fuel and energy complex, power supply in the country is limited, which leads to disconnection of hundreds of enterprises and transport facilities. The main consequence, however, is that millions of Ukrainian citizens are not guaranteed even elementary living conditions; electricity and gas are regularly cut off, their homes are poorly heated.

The deepening of negative processes in the fuel and energy complex is mainly conditioned by the emergence of the following problem areas.

· Non-payment for consumed fuel and energy resources and rapid deterioration of the financial standing of enterprises of the fuel and energy complex. The main reasons include the crisis of non-payments due to the continued practice of free consumption of fuel and energy resources, the repressive character of the tax system, low effectiveness of production and non-competitiveness of the majority of enterprises. As of January 1, 2000, arrears of all categories of users for electric power alone amounted to UAH 6.75 billion — 1.23 billion more than a year before.

An increasing gap between the available funds and credit resources and the needs of production in the fuel and energy complex. The unbalanced national financial system made branches of the fuel and energy complex the largest creditors and donors of the national economy through actually "interest-free crediting" by fuel and energy companies of separate branches of economy, non-competitive enterprises and, partly, the population. Aggravation of the financial crisis brings about non-payments for fuel and energy, and the spread of barter: although cash payments for electric power in 2000 rose19, the share of barter operations in the fuel and energy complex exceeded the average figure for industry (17.7%) and made up: in power engineering — 20.1%, in fuel industry — 26.2%20.

· Excessive energy consumption in the economy. The main reasons are: power-consuming structure of industry; technical backwardness of energy-consuming industries and excessive losses at all stages of production; mismanagement; existence of the "shadow" economy; direct theft. In the result, in 1990-2000 energy consumption of Ukraine's GDP was constantly growing, and presently makes close to 1.92 kg of conventional fuel per UAH 1 of GDP — that exceeds indicator of developed countries by several times.

· Imperfect legislation. Legislation governing the fuel and energy complex is imperfect, fragmentary and, therefore, insufficient for the effective regulation of market relations in the sector. For this reason, the state has partly lost levers of influence, for instance, on the wholesale market of electric power after the privatisation of several Oblenergos in 2000. This led, among other things, to a sharp decline in the collection of fees for consumed electricity. The fundamental law for oil and gas complex has not been adopted yet, the Law of Ukraine "On Production Sharing Agreements" does not work. The rights of energy consumers, even those who regularly pay, are not protected, since consumers have no effective instruments of influence on suppliers that do not perform their contractual commitments.

· A real threat of collapse of Ukraine's integral energy system (danger of a systemic power engineering accident), in the result of deficit of power generation due to the lack of fuel; work on low frequencies (49.1-49.3 Hz) and non-restriction of consumer supplies by Oblenergos. This is a result of the critical state of power engineering in the country caused by: insufficient capacity of hydroelectric power plants, which significantly complicates the power system exploration at peak and semi-peak loads; complexity of power regulation conditioned by the fact that the main load of Ukraine's integral energy system is born by NPPs and coal-set units of thermal power plants, which regulation capacity is very low; ungrounded cancellation of planned preventive repairs of nuclear power plants; non-performance of the entire scope of work for enhancing nuclear power plant safety, so pernicious for NPP reliability and safety, economically ungrounded use of powerful thermal electric power plants in a shunting mode, fraught with early wear and tear of equipment and increased consumption of fuel; overtime operation of hydroelectric power plants, leading to wear and tear of equipment and consumption of water in excess of environmental standards.

· An increasing lag in the development of sources of raw materials in extractive industries of the fuel and energy complex, first of all — in oil and gas sector. Over the period of 1990-1999, the intensity of deep drilling fell 46 times, seismic prospecting — 15 times; growth of explored reserves does not even make up for their current extraction.

· Large debts for imported energy resources. As of November 1, 2000, Ukraine's debt for the Russian gas alone consumed in 1998-2000 made up $1.362 billion.

· Tough administration in the fuel and energy complex by the Government. The practice of "manual" control of cash flow continues. This is evidenced by constant changes of the algorithm of distribution of funds on the wholesale market of electric power by Government directives, as a result of periodical declaration of the state of emergency on that market.

· Critical dependence of the national fuel and energy complex on supplies of energy resources from one country — Russia (close to 60% import in 2000), fraught with the threat of monopoly dictates of energy resource prices and terms of their supply on the part of the Russian Federation.

· A chronic deficit of investments in all branches of the fuel and energy complex. The volume of investments into the basic branches of the fuel and energy complex in 1999 fell two to three times compared to 1990. This is not enough to compensate decommissioned production capacities.

· Wear and tear of fixed production assets. According to expert estimates, in all branches of the fuel and energy complex it makes up close to 60% and has turned into a threatening factor .

· Ukraine's non-compliance with its international counterparts. For instance, some projects in power engineering (with participation of the World Bank, the EBRD and German commercial banks) have been suspended, since Ukraine does not fulfil its own commitments of their finding. The practice of delayed payments for imported energy resources and unauthorised siphoning of transit Russian gas has become customary. This raises doubt as to Ukraine's reliability as a trade partner.

· A deepening scientific and technical lag in all branches of the fuel and energy complex. In 1998-1999, Ukraine's Ministry of Energy (for the first time in its history) did not plan any R&D activities. Lack of infrastructure for scientific engineering and technical support and maintenance of sophisticated equipment of branches of the fuel and energy complex has turned into an acute problem. production facilities of the fuel and energy complex, power consuming units, the majority of models of new domestic-made equipment have a low technological (technical) level that in no way can provide for steady economic growth.

· A low level of environmental safety at the fuel and energy complex enterprises. According to expert assessments, in 1999, the fuel and energy complex was responsible for close to 45% of air pollution in Ukraine, 25% of polluted water discharge, more than 20% of solid waste and close to 65% of all greenhouse gases. The level of nuclear power plant operation safety is insufficient.

· A significant lag in the pace of privatisation in the fuel and energy complex as compared with other sectors of the economy. The share of privatised companies makes up: in fuel industry — 27.6%, in power engineering — 16.2%, against 55.5% in industry. Privatisation in the fuel and energy complex is accompanied with covert division of former state property (Oblenergo privatisation by offshore companies at understated prices can be cited as an example here).

· The low level of social protection and labour safety at enterprises of the fuel and energy complex. According to preliminary data, wage arrears in the fuel and energy complex made up: in power engineering — UAH 120 million (as of December 1, 2000); in coal industry — almost UAH 1.9 billion, in oil and gas sector — nearly UAH 48 million (as of January 1, 2001). In coal industry alone, 24,561 cases of injury and 289 cases of lethal trauma were registered in 1999 — one of the worst levels of industrial injuries in the world. The level of deadly injuries at Ukrainian mines exceeds the U.S. level 100 times: in Ukraine, 25 million tons of extracted coal on the average involve 100 deaths of miners, against one in the U.S.28

· An unrealistic policy for medium term planning and forecasting in the fuel and energy complex. The overwhelming majority of targets of approved national programmes have never been attained; no branch or national energy programme has been realised in its entirety. In fact, there is no systematic national energy policy in Ukraine.

· Insufficient readiness of branches and enterprises of the fuel and energy complex to adopt norms and standards of the European Union. Even specialists do not υνδερστανδ